

VRU-Proxi-06-11 (after meeting)

Submitted by the secretary of the IWG VRU-Proxi

Informal document **GRSG-114-XX**
(114th GRSG, 09-13 April 2018
agenda item 5)

Proposal for a new Regulation on uniform provisions concerning the approval of motor vehicles with regard to the Blind Spot Information System

The text reproduced below was prepared by the secretary of the IWG on Awareness of Vulnerable Road Users proximity in low speed manoeuvres (VRU-Proxi) to demonstrate the current status of the proposed regulation on Blind Spot Information Systems.

I. **Proposal**

Opmerking [L1]: Check if an activation of BSIS only when turn left detected is acceptable.

Regulation No. XXX

Uniform provisions concerning the approval of motor vehicles with regard to the Blind Spot Information System

Introduction (for information)

Turning maneuvers with collisions between trucks turning right and cyclists, typically occurring at lower driving speeds or standstill, usually have serious consequences for the vulnerable road user. In the past the safety of vulnerable road users was raised by an improvement of the truck driver's vision by increasing the number of mirrors and by equipping trucks with side underrun protection. Since turning accidents still happen and driver assistance systems have been introduced in a lot of vehicle segments it seems to be obvious to use such assistance to address turning accidents between trucks and cyclists.

Theoretical considerations show that the criticality of traffic situations involving heavy vehicles and bicycles can increase within a very short time due to misunderstanding of the situation by the vehicle operators. In some cases, the increase can occur so suddenly that a high-intensive warning, intended to generate a driver reaction to the situation after an appropriate reaction time, cannot be activated early enough. In general, driver reactions to any information (high or low threshold / warning or information) can be expected only after a reaction time. This response time is much longer than the time required to avoid the accident in many situations - the accident cannot be avoided despite the warning.

High-intensity warnings are in the course of a driving situation only justified if the probability for an accident is high - otherwise vehicle drivers tend to ignore the system alerts. A (low threshold) informational assistance system, however, can be activated sufficiently early, as it helps the driver rather than annoys him. It is assumed to be possible to design a human-machine-interface for blind spot assistance systems in a way that it does not annoy drivers when the information is not needed, for instance by selecting the location of a signal outside of the primary focus area of drivers when looking straight ahead, but in an area that is visible when the gaze is slightly turned towards the planned driving direction. A favourable location that fulfils these requirements is a location approximately 40° off the right from an axis in direction of the vehicle centreline and going through the driver's eyepoint.

The Regulation therefore asks for an early activation of an information signal in case a bicycle might be entering a critical area on the passenger side of the vehicle, if the heavy vehicle would initiate a turn towards the bicycle, including situations where a counter-turn (away from the bicycle) is necessary to negotiate the turn. This informational assistance signal shall only be deactivated automatically in case of system failure or contamination of the sensors; a manual deactivation shall not be possible. Additionally, the Regulation asks for a different signal which shall be given when the collision becomes unavoidable, e.g. when a clear turn on the steering wheel or the operation of the turn indicators is detected. This additional warning signal may be deactivated automatically; it shall be deactivated together with the information signal in case of failure or sensor contamination.

The Regulation defines a test procedure which does not require actual turning maneuvers; this is acceptable since the information signal needs to be present sufficiently early anyway. Experimental data shows that some turn maneuvers of heavy vehicles, especially when turning into a narrow street, require a counter-turn that starts approximately 15 m before entering that street, so the test procedure included in this Regulation requires the information signal to be activated 15 m before the expected collision point.

1. Scope

- 1.1. This Regulation applies to the blind spot information system of vehicles of categories [M₂] N₂ [(>8t permissible maximum mass)] and [M₃ and] N₃; other vehicles may be approved at the request of the manufacturer.
- 1.2. The requirements of this Regulation are so worded as to apply vehicles which are developed for right-hand traffic. In vehicles that are developed for left-hand traffic these requirements shall be applied by inverting the criteria, when appropriate.
2. Definitions
- For the purposes of this Regulation:
- 2.1. "*Approval of a vehicle type*" means the full procedure whereby a Contracting Party to the Agreement certifies that a vehicle type meets the technical requirements of this Regulation;
- 2.2. "*Vehicle type with regard to its Blind Spot Information System*" means a category of vehicles which do not differ in such essential respects as:
- (a) The manufacturer's trade name or mark;
 - (b) Vehicle features which significantly influence the performances of the Blind Spot Information System;
 - (c) The type and design of the Blind Spot Information System.
- 2.3. "*Blind Spot Information System (BSIS)*" means a system to inform the driver of a possible collision with a bicycle near side.
- 2.4. "*Reaction time*" means the time between the information signal is given and a driver reaction has occurred.
- 2.6. "*Stopping distance*" means the distance required by the vehicle to come to a full stop after the Blind Spot Information Signal has been given, taking into account reaction time and brake deceleration.
- 2.7. "*Collision point*" means the position where the trajectory of any vehicle point would intersect with any bicycle points if a turn by the vehicle would be initiated.
- The theoretical collision point as referred to in Figure 1 Appendix 1 is the point where a collision would occur in the respective test condition if the vehicle would turn towards the bicycle, e.g. starting with a counter-steer maneuver at the last point of information. Note that the actual turning maneuver is not tested since the information is required to be given before turn initiation.
- 2.8. "*Last Point of Information (LPI)*" means the point at which the information signal shall have been given. It is the point preceding the expected turning motion of a vehicle towards a bicycle in situations where a collision could occur.
- 2.9. "*Near side*" means the side of the vehicle near the bicycle. The near side of the vehicle is the right side for right-hand traffic.
- 2.10. "*Information signal*" means an optical signal with the purpose of informing the vehicle driver about a nearby moving bicycle.

- 2.11. "*Vehicle Trajectory*" means the connection of all positions where the vehicle front right corner has been or will be during the course of a test run.
- 2.12. "*Bicycle*" means a combination of a bicycle and cyclist. This is simulated in test cases as specified in sections 6.5 and 6.6 with a test device according to ISO [WD] 19206-4. The reference point for the location of the bicycle shall be the most forward point on the center line of the bicycle.
- 2.13. "*Common space*" means an area on which two or more information functions (e.g. symbols) may be displayed, but not simultaneously
- 2.14. "*Lateral separation*" means the distance between the vehicle and the bicycle at the near side of the vehicle where the vehicle and bicycle are parallel to each other. The distance is measured between the plane parallel to the median longitudinal plane of the vehicle and touching its lateral outer edge, disregarding the projection of devices for indirect vision, and the median longitudinal plane of the bicycle minus half of the bicycle width being 250 mm. The lateral outer edge of the vehicle is only to be regarded in the area between the vehicle's forwardmost point and up to 6 m rearward.
- 2.15. "*First point of information*" means the most forward point at which the information signal can be given. It is the last point of information and a distance corresponding to a travel time of 4 seconds, taking into account the respective moving speeds of bicycle and vehicle.
- 2.16. "*Vehicle front right corner*" means the projection of the point that results from the intersection of the vehicle side plane (not including devices for indirect vision) and the vehicle front plane (not including devices for indirect vision) on the road surface.
- 2.17. "*Impact Position*" means the location of impact of the bicycle on the right side of the vehicle with respect to the vehicle front right corner, when both vehicles have reached the collision point, as specified in Appendix 1, Figure 3.
- 2.18. "*Vehicle Master Control Switch*" means the device by which the vehicle's on-board electronics system is brought, from being switched off, as in the case where a vehicle is parked without the driver being present, to normal operation mode.

Opmerking [s2]: Should be published approximately in Q3 2018.

3. Application for approval

- 3.1. The application for approval of a vehicle type with regard to the BSIS shall be submitted by the vehicle manufacturer or by his authorized representative.
- 3.2. It shall be accompanied by the documents mentioned below in triplicate and include the following particular:
 - 3.2.1. A description of the vehicle type with regard to the items mentioned in paragraph 5. below, together with dimensional drawings and the documentation as referred to in paragraph 6.1. below. The numbers and/or symbols identifying the vehicle type shall be specified.
- 3.3. A vehicle representative of the vehicle type to be approved shall be submitted to the Technical Service conducting the approval tests.

4. Approval

- 4.1. If the vehicle type submitted for approval pursuant to this Regulation meets the requirements of paragraph 5. below, approval of that vehicle type shall be granted.
- 4.2. The conformity of the requirements in paragraph 5. below shall be verified with the test procedure as defined in paragraph 6. below, however its operation shall not be limited to these test conditions.
- 4.3. An approval number shall be assigned to each vehicle type approved; its first two digits (00 for the Regulation in its initial form) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to the same vehicle type equipped with another type of Blind Spot Information System, or to another vehicle type.
- 4.4. Notice of approval or of refusal or withdrawal of approval pursuant to this Regulation shall be communicated to the Parties to the Agreement applying this Regulation by means of a form conforming to the model in Annex 1 and photographs and/or plans supplied by the applicant being in a format not exceeding A4 (210 x 297 mm), or folded to that format, and on an appropriate scale.
- 4.5. There shall be affixed, conspicuously and in a readily accessible place specified on the approval form, to every vehicle conforming to a vehicle type approved under this Regulation, an international approval mark conforming to the model described in Annex 2, consisting of either:
 - 4.5.1.1. A circle surrounding the letter "E" followed by the distinguishing number of the country which has granted approval;¹
 - 4.5.1.2. The number of this Regulation, followed by the letter "R", a dash and the approval number to the right of the circle prescribed in paragraph 4.5.1. above; or:
 - 4.5.2. An oval surrounding the letters "UI" followed by the Unique Identifier.
- 4.6. If the vehicle conforms to a vehicle type approved under one or more other Regulations annexed to the Agreement, in the country which has granted approval under this Regulation, the symbol prescribed in paragraph 4.5. above need not be repeated; in such a case, the Regulation and approval numbers and the additional symbols shall be placed in vertical columns to the right of the symbol prescribed in paragraph 4.5. above.
- 4.7. The approval mark shall be clearly legible and be indelible.
- 4.8. The approval mark shall be placed close to or on the vehicle data plate.

¹ The distinguishing numbers of the Contracting Parties to the 1958 Agreement are reproduced in Annex 3 to the Consolidated Resolution on the Construction of Vehicles (R.E.3), document ECE/TRANS/WP.29/78/Rev.6 - www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29resolutions.html

5. Specifications

5.1. Any vehicle fitted with a BSIS complying with the definition of paragraph 2.3. above shall meet the requirements contained in paragraphs 5.2. to 5.5. of this Regulation.

5.2. General requirements

The effectiveness of the BSIS shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by compliance with the technical requirements and transitional provisions of UN Regulation No. 10, 04 series of amendments or any later series of amendments.

5.3. Performance requirements

5.3.1. The BSIS shall inform the driver, by means of an optical signal, so that the vehicle can be stopped before crossing the bicycle trajectory.

It shall also inform the driver about approaching bicycles while the vehicle is stationary before the bicycle reaches the vehicle front, taking into account a reaction time of 1.4 seconds. This shall be tested as specified in paragraph 6.6.

The optical signal shall be maintained only for as long as the conditions are fulfilled, and for at least three additional seconds if the vehicle is turning away from the bicycle line of movement.

The BSIS shall warn the driver, by means of an optical, acoustic or haptic signal, when the risk for a collision increases.

5.3.1.1. The information signal shall meet the requirements of paragraph 5.4. below.

5.3.1.2. The warning signal shall meet the requirements of paragraph 5.5. below. It may be deactivated manually. In case of a manual deactivation, it shall be reactivated upon each activation of the vehicle master control switch.

5.3.1.3. The BSIS shall at least operate for all forward vehicle speeds from standstill to 30 km/h, for ambient light conditions above [1000] Lux.

5.3.1.4. The BSIS shall give an information signal at last point of information, for a bicycle moving with a speed between 5 km/h and 20 km/h, at a lateral separation between bicycle and vehicle of between 0.9 and 4.25 metres, which could result in a collision between bicycle and vehicle with an impact position 0 to 6 m with respect to the vehicle front right corner, if typical steering input would be applied by the vehicle driver.

The information signal shall not be visible before the first point of information. It shall be given between the first point of information and the last point of information.

It shall also give an information signal if a bicycle is detected at a lateral separation of between 0.25 up to 0.9 m longitudinally at least located at the most forward front wheel while driving straight.

5.3.1.5. The BSIS shall be designed not to give an information signal for static non-VRU objects such as cones, traffic signs, hedges and parked cars, however it may give an information signal when a collision is imminent.

Opmerking [s3]: France: In addition we suggest to confirm the immunity check by adding in the UNECE n°10 regulation the following wording : "§ 2.12. "Immunity related functions" are: [...]"
(b) Functions related to driver, passenger and other road user protection:
(i) e.g. airbag and safety restraint systems, blind spot information system."

- 5.3.1.6. The BSIS shall automatically deactivate if it cannot operate properly due to its sensing devices being contaminated by ice, snow, mud, dirt or similar or due to ambient light conditions. This shall be indicated as specified in paragraph 5.6.2. It shall automatically reactivate when the contamination disappears and normal function has been verified. This shall be tested in accordance with the provisions of paragraph 6.10. below.
- 5.3.1.7. The BSIS also shall provide the driver with a failure warning when there is a failure in the BSIS that prevents the requirements of this Regulation of being met. The warning shall be as specified in paragraph 5.6.1. This shall be tested in accordance with the provisions of paragraph 6.9. below (failure detection test).
- 5.3.2.. The manufacturer shall demonstrate, to the satisfaction of the technical service and type-approval authority, through the use of documentation, simulation or any other means, that the Blind Spot Information System is performing as specified also for smaller bicycles and smaller bicyclists, differing by not more than 36 % from the values detailed in ISO [WD] 19206-4:2018.
- 5.4. Information signal
- 5.4.1. The blind spot information referred to in paragraph 5.3.1. above shall be an information signal and noticeable and easily verifiable by the driver from the driver's seat .This information signal shall be visible even by daylight.
- 5.5. Warning signal
- 5.5.1. The warning signal referred to in paragraph 5.3.2. above shall be a signal differing, e.g. in mode or activation strategy, from the information signal specified in paragraph 5.4.
- 5.5.2. It shall be easily understandable for the driver to relate the warning signal to the potential collision.
- 5.5.3. The warning signal shall be activated at the earliest when the system detects a potential collision, e.g. by the intention of a turn towards the bicycle, e.g. by evaluating the distance between or trajectory intersection of vehicle and bicycle, direction indicator activation or similar. The strategy shall be explained in the information referred to in paragraph 6.1. It shall not depend solely on the activation of the direction indicator.
- The technical service shall verify the operation of the system according to the strategy.
- 5.6 Failure warning signals
- 5.6.1 The failure warning referred to in paragraph 5.3.1.7. above shall be a yellow optical warning signal and shall be other than or clearly distinguishable from the information signal. The failure warning signal shall be visible even by daylight and shall be easily verifiable by the driver from the driver's seat.
- 5.6.2 The optical warning signal referred to in paragraph 5.3.1.6. shall indicate that the BSIS is temporarily not available. It shall remain active as long as the BSIS is not available. The failure warning signal specified in paragraph 5.3.1.7. above may be used for this purpose.
- 5.6.3 The BSIS optical failure warning signals shall be activated with the activation of the vehicle master control switch. This requirement does not apply to warning signals shown in a common space.

- 5.7 Provisions for inspection
- 5.7.1 It shall be possible to confirm the correct operational status of the BSIS by a visible observation of the failure warning signal status.

6. Test procedure

- 6.1. The manufacturer shall provide a documentation package which gives access to the basic design of the system and, if applicable, the means by which it is linked to other vehicle systems. The function of the system shall be explained and the documentation shall describe how the operational status of the system is checked, whether there is an influence on other vehicle systems, and the method(s) used in establishing the situations which will result in a failure warning signal being displayed. The documentation package shall give sufficient information for the type-approval authority to identify the type and to aid the decision-making on the selection of the worst-case condition as described in paragraph 6.3.3.
- 6.2. Test conditions
 - 6.2.1. The test shall be performed on a flat, dry asphalt or concrete surface.
 - 6.2.2. The ambient temperature shall be between 0° C and 45° C.
 - 6.2.3. The test shall be performed under visibility conditions that allow safe driving at the required test speed.
- 6.3. Vehicle conditions
 - 6.3.1. Test weight

The vehicle may be tested at any condition of load, the distribution of the mass among the axles being that stated by the vehicle manufacturer without exceeding any of the maximum permissible mass for each axle. No alteration shall be made once the test procedure has begun. The vehicle manufacturer shall demonstrate through the use of documentation that the system works at all conditions of load.
 - 6.3.2. The vehicle shall be tested at the tyre pressures for normal running conditions.
 - 6.3.3. In the case where the BSIS is equipped with a user-adjustable information timing, the test as specified in paragraphs 6.5 and 6.6 below shall be performed for each test case with the information threshold set at the settings that generate the information signal closest to the collision point, i.e. worst case setting. No alteration shall be made once the test run has started.
- 6.4. Optical failure warning signals verification test
 - 6.4.1. With the vehicle stationary check that the warning signals comply with the requirements of paragraph 5.6. above.
 - 6.4.2. With the vehicle stationary, activate the information and warning signals as specified in paragraphs 5.4 and 5.5. and verify that the signals comply with the requirements specified in those paragraphs.
- 6.5. Blind Spot Information Dynamic Test

- 6.5.1. Using cones and the bicycle dummy, form a corridor according to Figure 1, Appendix 1 of this document and the additional dimensions as specified in Table 1, Appendix 1 of this Regulation.
- 6.5.2. Position the bicycle target at the appropriate starting position as shown in Figure 1, Appendix 1 of this Regulation.
- 6.5.3. Position a local traffic sign corresponding to sign C14 as defined in the Vienna convention on road signs and signals² (speed limit 50 km/h) or the local sign closest to this sign in meaning on a pole at the entry of the corridor which as shown in Figure 1, Appendix 1 of this Regulation. The sign lowest point of the sign shall be mounted 2 m above the test track surface.
- 6.5.4. Drive the vehicle at a speed as shown in Table 1, Appendix 1 of this document with a tolerance of +/- 2 km/h through the corridor.
- 6.5.5. Do not operate the turn lights during the test.
- 6.5.6. Move the bicycle dummy on a straight line as shown in Figure 1, Appendix 1 of this document in a way that the dummy position crosses line A (Figure 1, Appendix 1) with a tolerance of +/- 0.5 m at the same time when the vehicle crosses line B (Figure 1, Appendix 1) with a tolerance of ± 0.5 m. Accelerate the dummy within an acceleration distance of not more than 5.66 m to the speed as shown in Table 1, Appendix 1 of this document and assure that that the dummy moves in a steady state for at least 8 seconds, with a speed tolerance of ± 0.5 km/h, before reaching line C as specified in Figure 1, Appendix 1. If the acceleration distance cannot be achieved, adjust bicycle starting position and vehicle corridor length by the same amount.
- The lateral deviation of the dummy with respect to a straight line connecting initial starting position and theoretical collision point (as defined in Figure 1 Appendix 1) shall be maximum ± 0.2 m.
- 6.5.7. Verify if the Blind Spot Information signal has been activated before the vehicle crosses line C, Figure 1, Appendix 1 of this document, and if the Blind Spot Information signal has not been activated before the vehicle crosses line D, Figure 1.
- 6.5.8. Verify that the Blind Spot Information signal has not been activated when passing the traffic sign and any cones as long as the bicycle dummy is still stationary.
- 6.5.9. Repeat paragraphs 6.5.1. to 6.5.8. for test cases shown in Table 1, Appendix 1 of this Regulation

Where this is deemed justified, the technical service may select test cases different than shown in Table 1, Appendix 1, within the range of vehicle speed, bicycle speed and lateral clearance as indicated in paragraphs 5.3.1.3. and 5.3.1.4.

The technical service shall check that the parameter combination in the selected test cases would lead to a collision between bicycle and vehicle with an impact position in the range as specified in 5.3.1.4. and shall assure that the vehicle is moving with the selected speed when crossing line C in Figure

² See ECE/Trans/196, p. 91

1, Annex 1. by appropriately adjusting starting distances and corridor length for vehicle and bicycle.

- 6.5.10. The test is passed when the Blind Spot Information signal has been activated in all test cases as shown in Table 1, Appendix 1 of this Regulation before the vehicle has crossed line C (see paragraph 6.5.7. above) and the Blind Spot Information signal has not been activated in any test run when the vehicle passes the traffic sign (see paragraph 6.5.8. above).

For vehicle speeds up to 5 km/h, it is deemed satisfactory if the information signal is activated 1.4 seconds before the bicycle has reached the theoretical collision point as specified in Appendix 1 Figure 1.

For vehicle speeds above 25 km/h, where the stopping distance is higher than 15 m, d_c as specified in Appendix 1 Figure 1 shall be as specified in Appendix 1 Table 2.

- 6.6. Blind Spot Information Static Tests

- 6.6.1. Static Test Type 1

Leave the vehicle under test stationary. Then manoeuvre the bicycle dummy perpendicular to the vehicle's center axis with an impact position 1.15 m in front of the most forward point of the vehicle, with a speed of 5 ± 0.5 km/h and a lateral tolerance of 0.2 m, as shown in Figure 2 in appendix 1.

The test is passed if the Blind Spot information signal is activated at the latest when the distance between bicycle and vehicle is 2 m.

- 6.6.2. Static Test Type 2

Leave the vehicle under test stationary. Then maneuver the bicycle dummy parallel to the vehicle's center axis, with a lateral separation of 3 ± 0.2 m between bicycle line of movement and the vehicle's most outer point not counting mirrors, with a bicycle speed of 20 ± 0.5 km/h, as shown in Figure 2 in appendix 1. The bicycle should be at constant speed at least 44 m before passing the most forward vehicle point.

The test is passed if the Blind Spot information signal is activated when the bicycle is 7.77 m away from the projection of the vehicle's most forward point to the bicycle line of movement.

- 6.8. The manufacturer shall demonstrate, to the satisfaction of the type-approval authority, through the use of documentation, simulation or any other means, that the Blind Spot Information signal is not activated, as described in paragraph 6.5.10., when the vehicle passes any other usual stationary object than the traffic sign. In particularly parked cars shall be addressed.

- 6.9. Failure detection test

- 6.9.1. Simulate a BSIS failure, for example by disconnecting the power source to any BSIS component or disconnecting any electrical connection between BSIS components. The electrical connections for the failure warning signal of paragraph 5.4.3. above shall not be disconnected when simulating a BSIS failure.

- 6.9.2. The failure warning signal mentioned in paragraph 5.6.1. above and specified in paragraph 5.6.1. shall be activated and remain activated while the vehicle is being driven and be reactivated upon each activation of the vehicle master control switch as long as the simulated failure exists.

- 6.10. Automatic deactivation test
- 6.10.1. Contaminate any of the system's sensing devices completely with a substance comparable to snow, ice or mud (e.g. based on water). The BSIS shall automatically deactivate, indicating this condition as specified in paragraph 5.6.2.
- 6.10.3. Remove any contamination from the system's sensing devices completely and perform a reactivation of the vehicle master control switch. The BSIS shall be automatically reactivated after a driving time not exceeding 60 seconds.

7. Modification of vehicle type and extension of approval

- 7.1. Every modification of the vehicle type as defined in paragraph 2.2. of this Regulation shall be notified to the Type Approval Authority which approved the vehicle type. The Type Approval Authority may then either:
 - 7.1.1. Consider that the modifications made do not have an adverse effect on the conditions of the granting of the approval and grant an extension of approval;
 - 7.1.2. Consider that the modifications made affect the conditions of the granting of the approval and require further tests or additional checks before granting an extension of approval.
- 7.2. Confirmation or refusal of approval, specifying the alterations, shall be communicated by the procedure specified in paragraph 4.4. above to the Contracting Parties to the Agreement applying this Regulation.
- 7.3. The Type Approval Authority shall inform the other Contracting Parties of the extension by means of the communication form which appears in Annex 1 to this Regulation. It shall assign a serial number to each extension, to be known as the extension number.

8. Conformity of production

- 8.1. Procedures concerning conformity of production shall conform to the general provisions defined in Article 2 and Schedule 1 to the Agreement (E/ECE/TRANS/505/Rev.3) and meet the following requirements:
- 8.2. A vehicle approved pursuant to this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements of paragraph 5. above;
- 8.3. The Type Approval Authority which has granted the approval may at any time verify the conformity of control methods applicable to each production unit. The normal frequency of such inspections shall be once every two years.

9. Penalties for non-conformity of production

- 9.1. The approval granted in respect of a vehicle type pursuant to this Regulation may be withdrawn if the requirements laid down in paragraph 8. above are not complied with.

- 9.2. If a Contracting Party withdraws an approval it had previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation by sending them a communication form conforming to the model in Annex 1 to this Regulation.

10. Production definitively discontinued

If the holder of the approval completely ceases to manufacture a type of vehicle approved in accordance with this Regulation, they shall so inform the Type Approval Authority which granted the approval, which in turn shall forthwith inform the other Contracting Parties to the Agreement applying this Regulation by means of a communication form conforming to the model in Annex 1 to this Regulation.

11. Names and addresses of the Technical Services responsible for conducting approval tests and of Type Approval Authorities

The Contracting Parties to the Agreement applying this Regulation shall communicate to the United Nations Secretariat the names and addresses of the Technical Services responsible for conducting approval tests and of the Type Approval Authorities which grant approval and to which forms certifying approval or extension or refusal or withdrawal of approval are to be sent.

Appendix 1

Figure 1: Dynamic Tests

Mark corridor using cones *,
spacing not more than 5 m

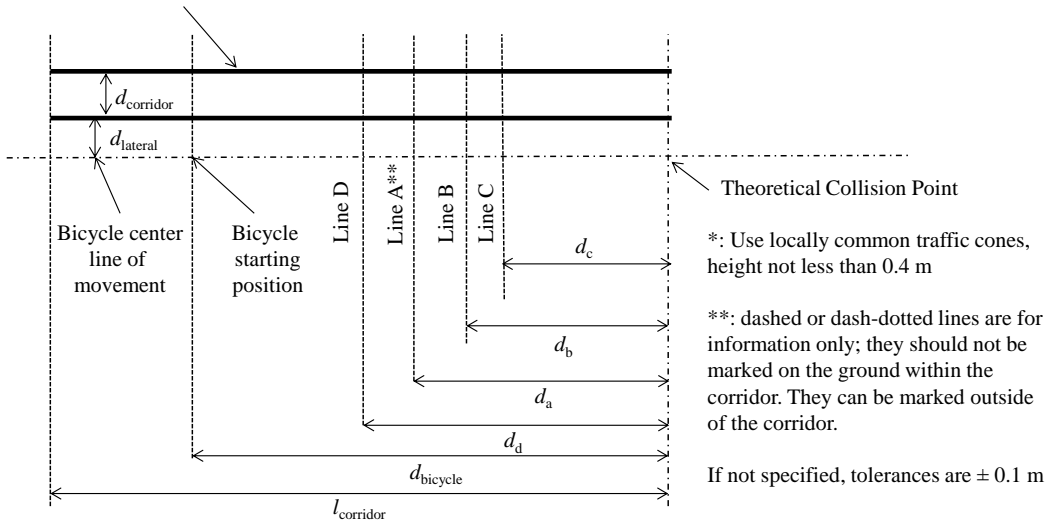


Figure 2: Static Tests

Not To Scale

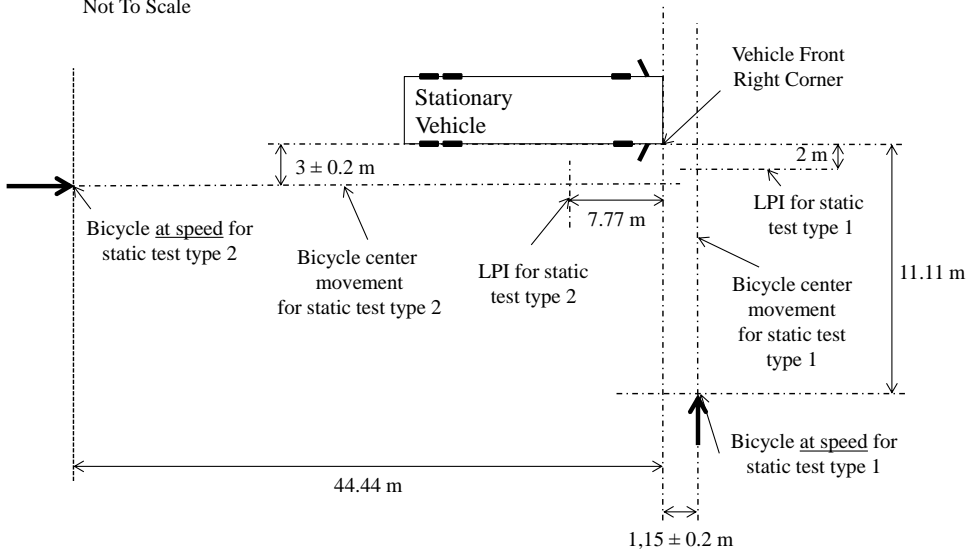


Figure 3: Impact Location

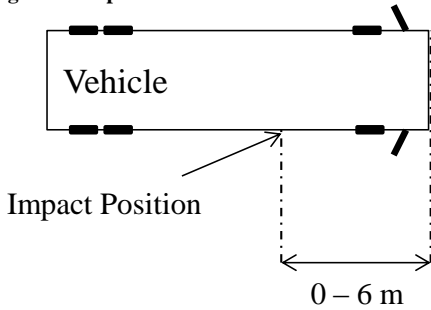


Table 1: Test cases

The following table details the test cases, using the following variables:

- v_{vehicle} , steady-state velocity of vehicle,
- v_{bicycle} , steady-state velocity of bicycle,
- d_a , bicycle position when vehicle crosses line b,
- d_b , vehicle position when bicycle crosses line a,
- d_c , vehicle position at last point of information,
- d_d , vehicle position at first point of information,
- d_{bicycle} , starting position of bicycle
- l_{corridor} , length of vehicle corridor,
- d_{corridor} , width of vehicle corridor.
- d_{lateral} , lateral separation between bicycle and vehicle.

Test Case	v_{bicycle} [km/h]	v_{vehicle} [km/h]	d_{lateral} [m]	d_a [m]	d_b [m]	d_c [m]	d_d [m]	d_{bicycle} [m]	l_{corridor} [m]	d_{corridor} [m]	
1	20	10	1.25	44.4	15.8	15	37.2	65	80	vehicle width + 1 m	
2	20	10			22	15	37.2				
3	20	20			38.3	15	Not checked				
4	10	20	4.25	22.2	43.5	15	59.4				
5	10	10			19.8	15	Not checked				
6	20	10			44.4	14.7	15				37.2
7	20	10									17.7

Table 2: d_c for speeds above 25 km/h

Vehicle Speed [km/h]	d_c [m]
25	15
26	15.33
27	16.13
28	16.94
29	17.77
30	18.61

Annex 1

Communication

(Maximum format: A4 (210 x 297 mm))



issued by : (Name of administration)

.....

- Concerning:²
- Approval granted
 - Approval extended
 - Approval refused
 - Approval withdrawn
 - Production definitively discontinued

of a type of vehicle with regard to the Blind Spot Information System (BSIS) pursuant to Regulation No. XXX

Approval No.:

1. Trademark:
2. Type and trade name(s):
3. Name and address of manufacturer:
4. If applicable, name and address of manufacturer's representative:
5. Brief description of vehicle:
6. Date of submission of vehicle for approval:
7. Technical Service performing the approval tests:
8. Date of report issued by that Service:
9. Number of report issued by that Service:
10. Reason(s) for extension (if applicable) :
10. Approval with regard to the BSIS is granted/refused/extended/withdrawn:²
11. Place:
12. Date:
13. Signature:
14. Annexed to this communication are the following documents, bearing the approval number indicated above:
15. Any remarks:

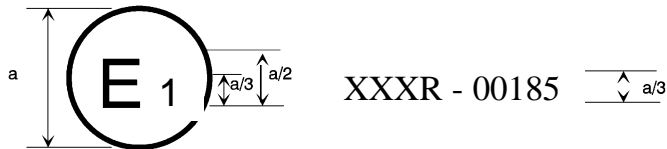
¹ Distinguishing number of the country which has granted/extended/refused/withdrawn an approval (see approval provisions in the Regulation).

² Strike out what does not apply.

Annex 2

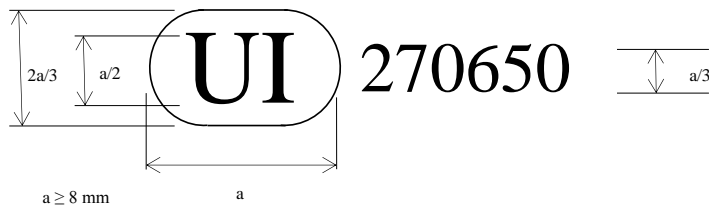
Arrangements of approval marks

(see paragraphs 4.5. to 4.5.2. of this Regulation)



$a = 8 \text{ mm min}$

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in Germany (E1) with regard to the BSIS pursuant to Regulation No. XXX. The first two digits of the approval number indicate that the approval was granted in accordance with the requirements of Regulation No. XXX in its original form.



The above Unique Identifier shows that the type concerned has been approved and that the relevant information on that type-approval can be accessed on the UN secure internet database by using 270650 as Unique Identifier. Any leading zeros in the Unique Identifier may be omitted in the approval marking.

II. Justification

The justification and information about the test procedure was provided in informal document GRSG-109-19 and in presentations GRSG-110-18-Rev.1 and GRSG-111-24. The draft Regulation was further explained during the 112th session of the Working Party on General Safety Provisions (GRSG) on the basis of another informal document, and consequently forwarded to the Proxy-VRU working group for technical discussion.

This document reflects the current status of the discussion in the Proxy-VRU working group. It is expected that decisions for the brackets as well as an agreement on chapter 6 will be found during the meeting Proxy-VRU 06 in June 2018 and a final working document is expected for the 115th GRSG.
